MEMORANDUM

INTERMOUNTAIN POWER SERVICE CORPORATION

TO: George W. Cross

FROM: Dennis K. Killian

DATE: August 12, 2004

SUBJECT: Plant Wide Actuator Betterment Program

We have formed a working group and established an actuator betterment program to improve our actuator operation reliability and safety. The program focuses on two fronts (a) conducting an immediate plant-wide actuator audit, and (b) establishing a long term valve-actuator overhaul, inspection, quality assurance and testing program.

Working with the OEM, preparations for the 1st round of actuator inspections is underway. With more than 600 electric actuators, visual inspection and testing will take up to two months to complete.

Historical Brief

Valve sticking may be caused by inadequate valve design, improper actuator sizing, buildup of corrosion, blueblush, stem bending, misalignment, and improper clearances. Levers and wrenches have at times been used to free up sticking valves. According to Limitorque, force from a lever may initiate cracks in valve components (i.e., actuator and bonnet support bracket) and lead to fracture. Limitorque reported the Crystal River incident as "...the accident involved an SMC-2 actuator that had been installed for 20 years. During the 20-year life the SMC-2 had not been routinely maintained and personnel were not properly trained in correct operating procedures. On January 22, 2004, the valve was closed electrically, and then further moved in the close direction with a valve wrench. The use of a valve wrench is prohibited by the Limitorque Instruction and Operation Manual. In this instance, the high forces created by the use of the valve wrench caused multiple cracks in the actuator housing. Further operations on January 29, 2004 appear to have extended the cracks. When the gate valve came off the seat during the opening of the valve on January 29, 2004, the high line pressure exerted sufficient force through the valve stem to complete the cracking, ejecting pieces of the housing, which struck the Progress Energy employee.

OSHA has informed Limitorque that we (Limitorque) will not be receiving any citations as a result of this incident." *[Flowserve Service Memorandum dated July 7, 2004]*

Valve & Actuator Program

We recommend the following actions to maximize our actuator operational reliability and safety:

CURRENTLY UNDERWAY

1. Create steering committee that will meet on a periodic basis (approximately monthly) and provide recommendations to Staff regarding program progress. Also form a working group, reporting to the steering committee including personnel from Operation, Maintenance, and Engineering to implement the approved valve and actuator improvement program.

2. Identify and prioritize plant-wide critical valves and electric actuators including Limitorque and Rotork (Phase I.) The pneumatic and hydraulic operators can be identified and inspected subsequently if desired (Phase II.)

3. Work with the OEM to establish inspection criteria, testing requirements, procedures, and schedules. (Refer to the attached Limitorque Inspection and Testing Procedure.)

4. Conduct Phase I audit with the OEM. Limitorque is offering an on-site visual inspection at minimal cost to verify actuator suitability for service. (Refer to the attached Special Announcement.) A comprehensive audit agenda has been discussed with the OEM to:
   - Conduct an on-line visual inspection of all Limitorque electric actuators.
   - Conduct an on-line inspection and diagnostic testing of accessible, critical valves, dampers, and actuators.
   - Conduct off-line inspection and testing of critical valves, dampers, and actuators.
   - Perform actuator design evaluation.
   - Implement corrective actions.

LONGER TERM

1. Evaluate necessity and feasibility of creating a valve/actuator maintenance dedicated crew, including:
   - Training on valve and actuator overhaul, repair,

inspection, packing.

- Training on operational practice.

2. Evaluate necessity of creating a valve/actuator overhaul program, including:
   - Overhaul and repair procedures (base on OEM, industry and IPSC requirements).
   - Specifications.
   - Quality assurance.
   - Scheduled PMs for online & off line testing.
   - Scheduled PMs for online & off line inspection.

3. Establish communication with OEM, including:
   - Technical letter distribution list.
   - Operation, maintenance and safety bulletins.

The above recommendations are a framework to improve the long term reliability of our actuators. Adjustments will be made to this program as experience and Staff direction dictate. Please signify your approval and contact Phong Do at ext. 6475 with questions.

George W. Cross
President and Chief Operations Officer
Intermountain Power Service Corporation

Date

PTD/JKH:jmj
Attachments

cc: Jon A. Finlinson
Stan Smith